Public Values Guidelines and Self-Assessment for Immersive Experiences

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Colophon

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Rathenau Instituut public spaces waag futurelab

Instructions

The aim of the Public Values Self-Assessment (PVS) is to increase awareness of Public Values in the Immersive Experiences (IX) field, and as far as possible avoid any harmful effects. The test focuses on usage during the application and quotation procedures for funding within the Creative Industries Immersive Impact Coalition (CIIIC) National Growth Fund Programme.

The PVS consists of two sections: Section A is the Guidelines. This is the detailed introduction to the PVS, where the seven values are explained. The guidelines are intended to prepare the reader for section B. Read them carefully first.

Section B consists of the Test and has three parts: part 1 is the conditions, part 2 the questions and part 3 the open question.

Section A is informative and provides guidance. While in section B, each component is assessed differently. The conditions in part 1 must be signed. An application or quotation cannot be submitted without this signature. The questions in part 2 must be answered honestly by the applicant/tenderer. A committee will review this part and take the answers into account when evaluating the application/quotation. In this section, there is no such thing as a wrong answer. The questions are intended to provide clarity about any possible risks derived from the experience and provide insight into how the applicant/tenderer can deal with them.

The open question in part 3 offers an opportunity to discuss the positive effects that the project could have on a specific value. This question is optional and can be taken into account in the overall assessment of the project.

A. Public Values Guidelines within Immersive Experiences

> Disclaimer: the technology around IX is changing at breakneck speed, and specifications, hardware, software, conditions and legislation are subject to change. It is important for CIIIC to continuously monitor these developments and it may prove necessary to reflect their effects in these Guidelines. The current version may therefore be subject to change.

Public values are central to the CIIIC National Growth Fund Programme. The Public Values Guidelines aim to define public values and are intended for anyone developing activities within Immersive Experiences: developers, applicators, researchers, makers and other stakeholders (hereafter referred to as ‘IX professionals’).

IX immerse us sensorially in an alternative, digitally-created reality, for example through projections, audioscapes, virtual reality, 360-degree images/video, augmented reality, chatbots, interactive animations and games. Within IX, Extended Reality (XR) devices, such as headsets, often play an important role. XR is the collective name for technologies that supplement, strengthen or replace our view of the world. This is done by projecting digital information and graphic elements onto the real world, by creating purely virtual environments or a combination of the two. This process is also known as 'spatial computing'.

CIIIC expects IX to have a major impact on our daily lives in terms of work, learning and recreation, and to be drivers of the third digital transition.

Recent developments in the field of digital technology offer opportunities and challenges for meeting public values. These opportunities and challenges also play a role within IX and the XR devices used for IX.

These opportunities include new forms of treatment and research in healthcare, the inclusion of specific target groups with physical disabilities, and new forms of art and storytelling. The risks include the far-reaching collection of highly personal data via sensors and new forms of disinformation. The rapid development of AI applications and possible integration into IX, where regulations are lagging behind, is also having a major social impact and should be closely monitored.

It is clear that in the rapidly developing field of IX public values must be safeguarded. In line with the Rathenau Institute's research into immersive technologies, the Public Values Self-Assessment (PVS) focuses on seven values: Privacy, Self-determination, Democracy, Health, Safety, Inclusivity/Participation/ Non-Discrimination and Sustainability. We expand on these seven values below and offer recommendations for how each one can be safeguarded as effectively as possible within the context of IX.

The best way to achieve this is still the subject of research. The PVS is a first step here, intended to reduce the greatest risks for the user, and initiate the conversation around public values and technology.

The basic principles of the Guidelines are that the user of IX should suffer no harm, that any financial interests within the production are clearly disclosed and that there is commercial transparency in line with any relevant good governance frameworks within which the IX professional operates.

When applying the Guidelines, other standards may apply within the context of satire or artistic/creative expression, provided these are clearly content-driven.

1. Privacy

To function properly, XR devices are equipped with a (large) number of sensors that can record data about location, environment and movement. XR devices may also record health and biometric data (eye movements, pupillary reflexes, heart

rate, breathing, etc.). And finally, for specific applications, various data can be collected regarding the use of the application and the user themselves (such as account details and preferences).

The IX professional should be aware of the privacy-sensitivity of this data and handle it in a careful and lawful manner. More specifically, this concerns the following privacy-sensitive aspects:

- First, the data of users that the provider themselves collects to allow the application to function properly.
- Second, user data collected by the manufacturers/providers of the XR (hardware) platforms that the application uses. On the one hand, data collection is necessary for the product to function; but on the other, it is an essential part of the revenue model for some hardware providers.
- Third, data collected via sensors on devices from bystanders without their permission. For the sake of bystander privacy, it is important to exercise restraint when collecting data.

The General Data Protection Regulation (GDPR) is the most important framework for the lawful processing of personal data. The GDPR sets the following requirements for the processing of personal data within IX applications:

1. The application is lawful (has a clear purpose with a legal basis).
2. The application is transparent (people concerned are informed).
3. The data is not used for other purposes (purpose limitation).
4. Only necessary data is processed (data minimisation).
5. The data is not stored longer than necessary (storage limitation).
6. The data is well secured.

The IX professional should first ensure their own processing operations within IX meet these requirements. Not only in terms of the privacy of the application's users but also that of bystanders.

In order to reduce the privacy risk around data collection by providers and manufacturers of IX hardware and platforms, it is important that IX professionals do all they can within their sphere of influence to limit data acquisition and storage. This can be done, for example, by minimizing data collection, using locally hosted servers and anonymizing personal data.

The choice of specific hardware can also make a difference here. For example, by comparing the privacy conditions (and options for setting them) of different providers. If hardware and/or software from third parties is used, there must be clear agreements about the data processing, for example by means of a (processing) agreement.

Finally, it is important that the IX user is informed in simple and clear language about which data will be collected and for what purposes, where and for how long the data is stored, and which parties have access to it. If this information is (partially) unknown, the user must also be informed of this fact.

By following these guidelines, the IX professional commits themselves to the requirements of the GDPR with regard to their own sphere of influence.

2. Self-determination

The intimate nature and physical proximity of IX, and the interaction between technologies such as AI, VR and neurotechnology, makes it possible to use deception to influence emotions and behaviour, creating a threat to self-determination.

An example of this is so-called ‘deceptive patterns’ (also known as ‘dark patterns’). These are interfaces, user journeys and visual or linguistic elements that induce or entice the user to make unintended, unconscious and/or potentially detrimental decisions in the field of data protection or making purchases.

Other examples of deliberate deception or manipulation include covert advertising and brand placement that direct users of the IX to specific physical locations or synthetic avatars that appear to be flesh-and-blood people.

By following these guidelines, the IX professional commits to avoiding unfair commercial practices and deception, and — in the case of advertising — to following the rules of the Dutch Advertising Code.

3. Democracy

Democratic decision-making needs consensus based on a common, impartial foundation of facts. Various social factors are putting this consensus under pressure. IX can blur the boundaries between the physical and digital worlds. Moreover, the blending of techniques such as XR, neurotechnology and AI can result in an extensive personalized virtual environment, a phenomenon also known as ‘hyper-personalization’.

The market dominance of a limited number of large tech companies from the US and China is a concern in the XR sector. Especially as they also provide essential services in the public domain, including education, healthcare and journalism. This is a European problem that cannot be solved by these guidelines alone. That does not alter the fact that awareness is essential in this context. To maintain democratic control, it is important to be on the lookout for (open source) alternatives and to build in as much user autonomy as possible. One way to counteract this concentration of power is to use standardization (see also Web 4.0 and virtual worlds (RP 2024)). These standards contribute to provider independence, control over information, and better data exchange between platforms and networks, also known as interoperability. The extent to which it is possible to use European providers (the EuroStack) when deploying technologies should also be considered.

By following these guidelines, the IX professional commits to addressing the perception-distorting effects of IX with integrity, exercising restraint in the use of such effects in public spaces, and taking measures to mitigate such adverse

effects (that is, effects that don't serve the direct purpose of the experience). IX professionals should also explore the possibility of making experiences available on devices from multiple providers, with preference, where possible, given to European standards, products and services.

4. Health

IX can have both a positive and negative impact on the health of users.

Potential positive health effects of IX can be found, for example, in therapeutic applications within mental healthcare, or where IX is used as an aid to training, for example for military operations or medical procedures.

Excessive use of IX can have an unwanted impact at a physical or mental level, for example through addiction or a distorted self-image. Other effects that may occur include cybersickness, eye damage, sleeping problems, depersonalization (alienation from one's own body and thoughts, including body dysmorphia) and derealization (experiencing the familiar environment as unreal).

Addictive elements — originally associated with social media and games — can also appear within IX, including the endless scroll, the 'like' button, loot boxes, in-game purchases and the offer of rewards.

By following these guidelines, the IX professional commits to a conscientious approach to the use of addictive elements, to minimizing health risks and to warning certain user groups about such risks. When the IX application is used as a medical device or for medical diagnostics, the IX professional should check to what extent the application falls under the legislation for medical devices.

5. Safety

More and more people experience digital reality as being just as real as physical reality. Partly for this reason, the safety of users within IX is becoming increasingly important.

Unsafe situations can arise through (sexual) harassment or impairment of personal space within the digital experience. This can be overcome by such measures as a code of conduct that prescribes consent, or the installation of an emergency button.

Where IX partly occurs in the physical world where the user has to operate autonomously, distractions can compromise their physical safety.

By following these guidelines, the IX professional is committed to preventing physical or mental harm.

6. Inclusivity, participation, non-discrimination

In an increasingly digitalized society, it is important to keep an eye on the accessibility of digital resources. This also applies to IX. The sometimes high purchase costs of XR equipment make their use income-dependent.

As well as economic inequality, there are other forms of inequality. For example, how accessible is IX for people with a language barrier or visual impairment? It is also important to consider not only the diversity of the target group, but also how diversity is safeguarded within teams of creators. The developer needs to be aware of this and make efforts to ensure broad accessibility.

Because the effects and experience of IX can vary depending on factors such as age, gender and physical disabilities, it is also important during the IX development process to design and test as inclusively as possible. Not only within the chosen target group, but also among groups who have less in common with the development team.

At the same time, IX offer an opportunity to promote inclusivity and participation, for example through digital participation in conferences or discussions, whereby travel costs or physical obstacles are not an impeding factor.

By following these guidelines, the IX professional commits to actively realizing inclusivity within the chosen target group, and to designs that promote inclusivity, participation and non-discrimination.

7. Sustainability

XR technology, along with the accompanying use of AI, data collection and data processing, uses a lot of energy. This forms a risk to a sustainable society. The hardware also uses precious and rare raw materials, and the speed of innovations mean that equipment has a limited lifespan. Recycling of raw materials within the XR industry is still in its infancy. The use of rare earth metals in hardware, for example, is a challenge because there is a lack of sufficient recycling systems within the XR industry.

On the other hand, IX may be able to reduce travel and use of materials, thereby reducing CO2 emissions.

By following these guidelines, the IX professional commits to researching and, where possible, implementing regular, innovative and creative ways of dealing with e-waste, or other energy-saving measures and/or materials.

B. Public Values Self-Assessment

The Public Values Guidelines for Immersive Experiences (IX) is put into practice through use of the Public Values Self-Assessment (PVS). This assessment consists of three parts and aims to stimulate research into, and safeguarding and operationalisation of, public values within the Creative Industries Immersive Impact Coalition (CIIIC) programmes.

Part 1 consists of a number of conditions that must be signed up to and that are part of the admissibility assessment.

In *part 2*, a number of questions must be answered on each value. There are no right or wrong answers. What matters most is that conscious choices are made in respect of public values, and to explain those choices.

In *part 3*, the applicant/tenderer is invited to expand on one value in the context of the project, in particular the potential positive impact. An appendix of maximum one page can be added for this purpose.

Part 1

I hereby declare that within this project:

- The sector-specific good governance framework is applied;
- No misleading or manipulative content or applications will be developed;
- The (mental) health and safety of the user will not be intentionally endangered;
- The personal data collected in line with the GDPR and related privacy legislation will be processed, and not be sold to third parties or otherwise used for purposes other than those of the project or experience itself;
- Efforts will be made to investigate how third parties (such as hardware or software providers) deal with data collected from users and bystanders, and whether this is communicated in clear and transparent language;
- Written agreements will be/have been made with other parties who process data for the purposes of my application (processing agreement).

Part 2

0. Purpose

0.1 What is the purpose of the experience, and who is the intended audience?

1. Privacy

1.1 With IX, data is often generated and stored by various parties. This data can be a risk to the privacy of the user and may make the user identifiable.

1. What data is collected, for what purposes and for how long; where is it stored and with whom is it shared?
2. What efforts have you made to minimize data collection?
3. What efforts have you made to secure the data?
4. How is this communicated to the user and any bystanders?
5. If you are unable to identify what happens to elements of the data, how do you make this clear to users and bystanders?

2. Self-determination

2.1 IX may threaten the self-determination of users by steering behaviour for the benefit of third parties, often with a commercial motive. Stakeholders with financial, political or other interests must be mentioned in a way that is clearly visible.

- Who is involved in the development of IX and what are their interests?
- How is the information above communicated to the user in a way that's understandable?

3. Democracy

3.1 Deliberate deception or manipulation using IX can undermine democracy. Can the experience be misused to spread mis- or disinformation?

`O yes` `O no`

`If yes:`

1. Describe how you communicate this to the user in an understandable way.
2. Describe how you minimize and mitigate these risks.

3.2 Are deep fakes or AI-generated content used?

`O yes` `O no`

`If yes:`

- How is this communicated to the user in an understandable way?

3.3 Is the experience used in physical public spaces, where this space is a visual or auditory part of the experience?

O yes O no

If yes:

- How do you communicate to bystanders and other users of this public physical space that they are part of IX?

3.4 Diversity of hardware and software contributes to digital autonomy. Working with open source hardware and software, and open European standards is one way to achieve this.

- What hardware is used, and on the basis of what considerations?
- Are (European) open standards used? If so, which ones? If not, why not?
- What do you do to use as much open source software as possible?

4. Health

4.1 IX can evoke strong emotional and/or physical reactions. It is therefore important to advise the user on responsible screen time and duration of the experience, and where necessary to offer on- and off-boarding and age-appropriate access requirements.

- How do you take into account the health of the user?
- How is this communicated?

4.2 The experience must be tested within the intended target group in order to prevent health problems such as cybersickness.

- How are the experiences tested?

5. Safety

5.1 If there is direct or indirect interaction between users within the experience, this may lead to undesirable or unsafe situations for those users. Is there any interaction between users?

`O yes` `O no`

`If yes:`

- Describe how you minimize and mitigate possible risks.
- How are these risks communicated to the user?
- What is your policy on moderation and identification?

5.2 If IX partly takes place in the physical world where the user has to operate autonomously, physical safety can be endangered by being distracted. Does the experience take place (partly) in the physical world?

O yes O no

If yes:

- Describe how you minimize and mitigate potential risks.
- How are these risks communicated to the user?

6. Inclusivity, participation, non-discrimination

6.1 IX must be designed to be as inclusive as possible, creating room for diversity within the target group.

- What efforts are being made — within the chosen target group — to develop the experience in an inclusive manner? For example, by involving people with hearing, visual or cognitive impairments; involving vulnerable groups or minority perspectives?
- How is inclusivity addressed within the team of makers, both in terms of the target group and the purposes of the experience?

7. Sustainability

7.1 IX can be an additional burden on the environment, in terms of both energy usage and materials.

- What energy-saving measures have been taken?
- Has consideration been given to the reuse of materials, and what did that result in?

Part 3

In part 2 of the PVS, we mainly focused on the potential negative effects of IX. Part 3 provides the chance to look at the positive impact on public values. Choose just one of the values (privacy, self-determination, democracy, health, safety, inclusiveness/participation/non-discrimination or sustainability) and explain how the application/quotation positively meets or contributes to this value.

Length: maximum 1 page.